The following Listing of the Claims will replace all prior versions and all prior listings of the claims in the present application.

Listing of the Claims

1. (Currently amended) An isolated nucleic acid molecule which is selected from the group consisting of:

a) a nucleic acid molecule which encodes a polypeptide which contains the amino acid sequence disclosed by SEQ ID NO: 2;

b) a nucleic acid molecule which contains the sequence depicted by SEQ ID NO: 1;

c) a nucleic acid molecule whose complementary strand hybridizes with a nucleic acid molecule from a) or b) under stringent conditions and which encodes a polypeptide which exhibits the biological function of a photoprotein.

d) a nucleic acid molecule which differs from the nucleic acid molecule of c) due to the degeneracy of the genetic code;

e) a nucleic acid molecule which exhibits a sequence homology <u>along its full length</u> with SEQ ID NO: 1 of at least 95% and encodes a polypeptide which has the biological function of a photoprotein; and

f) a nucleic acid molecule which exhibits a sequence homology <u>along its full length</u> with SEQ ID NO: 1 of at least 65% and encodes a polypeptide which has the biological function of a photoprotein.

2. (Withdrawn) An isolated nucleic acid molecule which is selected from the group consisting of:

a) a nucleic acid molecule which encodes a polypeptide which contains the amino acid sequence disclosed by SEQ ID NO: 3;

b) a nucleic acid molecule which contains the sequence depicted by SEQ ID NO: 4;

c) a nucleic acid molecule whose complementary strand hybridizes with a nucleic acid molecule from a) or b) under stringent conditions and which encodes a peptide which exhibits the biological function of a signal or leader peptide;

d) a nucleic acid molecule which differs from the nucleic acid molecule mentioned under c) due to the degeneracy of the genetic code;

e) a nucleic acid molecule which exhibits a sequence homology with SEQ ID NO: 4 of at least 90% and encodes a peptide which has the biological function of a signal or leader peptide; and

f) a nucleic acid molecule which exhibits a sequence homology with SEQ ID NO: 4 of at least 60% and encodes a peptide which has the biological function of a signal or leader peptide.

3. (Withdrawn) An isolated nucleic acid molecule which is selected from the group consisting of:

a) a nucleic acid molecule which encodes a polypeptide which contains the amino acid sequence disclosed by SEQ ID NO: 6;

b) a nucleic acid molecules which contains the sequence depicted by SEQ ID NO: 5;

c) a nucleic acid molecule whose complementary strand hybridizes with a nucleic acid molecule from a) or b) under stringent conditions and which encodes a polypeptide which exhibits the biological function of a photoprotein;

d) a nucleic acid molecule which differs from the nucleic acid molecule mentioned under c) due to the degeneracy of the genetic code;

e) a nucleic acid molecule which exhibit a sequence homology with SEQ ID NO: 5 of at least 95% and encodes a polypeptide which has the biological function of a photoprotein; and

f) a nucleic acid molecule which exhibits a sequence homology with SEQ ID NO: 5 of at least 80% and encodes a polypeptide which has the biological function of a photoprotein.

4. (Previously presented) The nucleic acid as claimed in claim 1, which contains a functional promoter 5' to its coding sequence.

5. (Previously presented) A recombinant DNA or RNA vector which contains the a nucleic acid as claimed in claim 4.

6. (Previously presented) An organism which harbors the vector as claimed in claim 5.

7. (Currently amended) An isolated oligonucleotide having more than 10 consecutive nucleotides which is identical or complementary to a constituent sequence of the nucleic acid molecule as claimed in claim 1, and which specifically hybridizes to the nucleic acid molecule as claimed in claim 1.

8. (Previously presented) An isolated polypeptide which is encoded by a nucleic acid sequence as claimed in claim 1.

9. (Previously presented) A method for expressing the polypeptide as claimed in claim 8 in bacteria, a viral system, yeast or a eukaryotic cell or in an in-vitro expression system by expressing said polypeptide.

10. (Cancelled)

11. (Withdrawn) An isolated peptide having more than 5 consecutive amino acids which is recognized immunologically by antibodies directed against the photoprotein mtClytin.

12. (Withdrawn) An isolated peptide having more than 5 consecutive amino acids which is recognized immunologically by antibodies directed against the photoprotein clytin-2.

13. (Withdrawn) An isolated peptide having more than 5 consecutive amino acids which is recognized immunologically by antibodies directed against the signal or leader peptide disclosed by SEQ ID NO: 3.

14. (Currently amended) The ~~use of a~~ nucleic acid as claimed in claim 1, further comprising a nucleic acid encoding a polypeptide other than that encoded by the nucleic acid of claim 1, wherein a fusion gene is formed and wherein said fusion gene functions as a marker gene or reporter gene.

15. (Currently amended) ~~The use of a~~ A photoprotein polypeptide encoded by the fusion gene of claim 14, wherein said photoprotein polypeptide functions ~~as claimed in claim 8~~ as a label or reporter.

16. (Withdrawn) The use of a nucleic acid which contains the sequence depicted as SEQ ID NO: 4 as a signal or leader sequence.

17. (Withdrawn) The use of a peptide which contains the sequence depicted as SEQ ID NO: 3 as a signal or leader peptide.

18. (Withdrawn) The use as claimed in claim 16 or 17 for transporting a protein which is fused to the signal or leader peptide into cell organelles.

19. (Withdrawn) The use as claimed in claim 18, wherein the cell organelles are mitochondria or the endoplasmic reticulum (ER).

20. (Currently amended) The ~~use of the~~ polypeptides as claimed in claim 8, wherein said polypeptide functions as a reporter proteins in searching for pharmacologically active compounds.

21. (Currently amended) The ~~use of the~~ nucleic acids as claimed in claim 1, wherein said nucleic acid functions as a reporter gene in searching for pharmacologically active compounds.

22. (New) The polypeptide of claim 8, wherein said polypeptide is coupled to an additional protein.

23. (New) The conjugate of claim 22, wherein said additional protein is selected from the group consisting of: an antibiotic, an enzyme, a receptor, an antibody and an ion channel.